

09/381233

TRANSMITTAL LETTER TO THE UNITED STATES  
DESIGNATED/ELECTED OFFICE (DO/EO/US)  
CONCERNING A FILING UNDER 35 U.S.C. 371INTERNATIONAL APPLICATION NO.  
PCT/CH99/00391INTERNATIONAL FILING DATE  
AUGUST 24, 1999

PRIORITY DATE CLAIMED

TITLE OF INVENTION METHOD FOR MANUFACTURING FILTER CARTRIDGES AND TESTING  
APPARATUS

APPLICANT(S) FOR DO/EO/US Hans ZUERCHER

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☒ has been transmitted by the International Bureau.
  - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
  - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. ☐ have been transmitted by the International Bureau.
  - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
  - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.  
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☒ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

Figure 1

17. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):

Search Report has been prepared by the EPO or JPO ..... \$ 840.00

International preliminary examination fee paid to USPTO (37 CFR 1.482)  
..... \$ 670.00No international preliminary examination fee paid to USPTO (37 CFR 1.482)  
but international search fee paid to USPTO (37 CFR 1.445(a)(2)) ..... \$ 490.00Neither international preliminary examination fee (37 CFR 1.482) nor  
international search fee (37 CFR 1.445(a)(2)) paid to USPTO ..... \$ 700.00International preliminary examination fee paid to USPTO (37 CFR 1.482)  
and all claims satisfied provisions of PCT Article 33(2)-(4) ..... \$ 96.00

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$ 840.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30  
months from the earliest claimed priority date (37 CFR 1.492(e)).

\$

CLAIMS NUMBER FILED NUMBER EXTRA RATE

Total claims 17 - 20 = X\$18.00 \$

Independent claims - 3 = X\$78.00 \$

MULTIPLE DEPENDENT CLAIM(S) (if applicable) + \$260.00 \$

TOTAL OF ABOVE CALCULATIONS =

\$ 840.00

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement  
must also be filed (Note 37 CFR 1.9, 1.27, 1.28).

\$

SUBTOTAL =

\$ 840.00

Processing fee of \$130.00 for furnishing the English translation later than ☐ 20 ☐ 30  
months from the earliest claimed priority date (37 CFR 1.492(f)).

\$

TOTAL NATIONAL FEE =

\$ 840.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be  
accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +

\$

TOTAL FEES ENCLOSED =

\$ 840.00

Amount to be:  
refunded \$  
charged \$a. ☒ A check in the amount of \$ 840.00 to cover the above fees is enclosed.b. ☐ Please charge my Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_ to cover the above fees.  
A duplicate copy of this sheet is enclosed.c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any  
overpayment to Deposit Account No. 01-2135. A duplicate copy of this sheet is enclosed.NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR  
1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

ANTONELLI, TERRY, STOUT & KRAUS, LLP  
1300 NORTH SEVENTEENTH STREET  
SUITE 1800  
ARLINGTON, VA 22209

SIGNATURE:

RONALD J. SHORE

NAME

28,577

REGISTRATION NUMBER

09/381,233

11/24/99

## **Method for Manufacturing Filter Cartridges and Testing Device**

The present invention relates to a method for manufacturing filter cartridges according to the preamble of Claim 1 as well as a testing device according to that in Claim 7.

It is known to manufacture filter cartridges and oil filter cartridges in particular by encapsulating the filter medium element itself in a filter housing whose base part has a threaded connection for the filter medium. In use, the filter cartridge is screwed on to a supply line on the system side for the medium to be filtered. On the base part, a sealing area surrounding the threaded connection is provided which is tensioned against a line-side sealing area when the filter cartridge is screwed on.

An important step in the manufacture of such filter cartridges is the final test step to determine whether the filter cartridge, in reality the filter housing, is tight.

It is conventional to perform the tightness test independently of how the filter cartridge to be tested is later mounted and used. In addition to tightness, important criteria that determine whether the finished filter cartridge can be used later or not include the formation of the threaded part on the filter housing, as well as the tightness achieved when the filter cartridge is screwed onto the medium feed line and tightened for operation.

The goal of the present invention is to propose a manufacturing method and a test device of the type recited at the outset that provide assurance that the manufactured filter cartridge is tested under conditions that conform to practical use. For this purpose, the method according to the invention is characterized by the fact that after the filter housing and filter have been assembled, a threaded head is screwed automatically and with forced rotation into the threaded connection, the filter cartridge with the threaded head screwed on is introduced

662760-EE1866

into a tightness test chamber where, by producing a pressure differential across the filter housing wall and observing the pressure in and/or outside the filter housing, a determination is made as to whether the filter housing is leaking or not and from observing the screwing motion of the threaded head, fulfillment or nonfulfillment of the shape specifications for the filter housing is ascertained.

In this way, within the framework of this manufacturing method, simultaneously with tightness testing of the filter housing, the form of the threaded connection is checked as well.

Nonfulfillment of prerequisites for the thread of the threaded connection is detected both in the tightness test (observing pressure behavior) and also during observation of the mechanical movement relationships during the screwing movement.

In addition, in a preferred embodiment in which a sealing part is provided externally on the base part and around the threaded connection, the filter housing is placed with the base part on a transport plate through which the threaded head is screwed into the threaded connection and then, by means of the threaded head, the sealing part is tightened on the base of the filter housing against the transport plate.

As a result, with provision of the above-mentioned sealing area on the filter housing, the effect of this part is tested as if in a practical application.

In another preferred embodiment of the method according to the invention, during the screwing-on movement of the threaded head and during the possibly provided tensioning of the transport plate against a test chamber dome during the tensioning of the sealing area against the transport plate that may be provided, and the dome together with the transport plate form the pressure test chamber.

Preferably, the interior of the filter housing is pressed against the transport plate by the threaded head and/or by the area immediately adjacent thereto. In another preferred embodiment of the method according to the invention, the screwing-on movement of the threaded head, the tensioning of the sealing area against the transport plate that may be provided, and the possible simultaneous relative movement of the transport plate and the test chamber dome are produced by a single linear drive.

In order to be able to detect the screwing-on movement of the threaded head as simply as possible, which movement may be used as a criterion for determining whether the existing threaded connection on the filter housing conforms to the standard or not, it is also proposed that the transport plate be mounted on a supporting part and that the threaded head, which is also displaceable in order to perform its screwing-on or screwing-off motion relative to the carrier plate, be mounted to be flexibly movable linearly relative thereto and the position of the threaded head relative to the support part be detected. For example, if the threaded head during the provided screwing-on motion, fails to reach a SET position, it can be concluded that the connecting thread provided on the filter cartridge housing is not correct, is too narrow for example.

As mentioned above (Claim 2), in a preferred embodiment of the method according to the invention, after the threaded head has been screwed into the threaded connection of the filter housing, the sealing part on the base of the filter housing is tensioned against the supporting plate by pulling back the threaded head. If the thread provided on the filter housing is too wide or is nonexistent, the detection of the preferred position of the threaded head during the above-mentioned pulling backward or tensioning indicates that the threaded head has been pulled inadmissibly far out of the threaded connection.

The test device according to the invention has at least one supporting plate on a frame and a test chamber dome aligned with the supporting plate and usually on top of it, with the plate and the dome being driven movably linearly relative to one another so that together they form a test chamber that can be closed in a sealing fashion. According to the invention, a threaded head is provided that is rotationally driven relative to the plate and driven in a linearly movable fashion which is movable through an opening in the supporting plate essentially perpendicularly to the supporting plate surface.

Preferred embodiments of the test device according to the invention are specified in Claims 8 to 16.

The invention will now be explained with reference to a figure. The figure shows schematically a test device according to the invention for working the manufacturing method according to the invention.

In the single figure, the important components of the test device according to the invention are shown schematically to explain the manufacturing method according to the invention.

A test chamber dome 3 is mounted on a frame 1 and, together with a supporting plate 5, forms a sealed test chamber that can be opened and closed. A receiving chamber 7 opposite dome 3 is mounted on supporting plate 5, said chamber being linearly movable with supporting plate 5 relative to frame 1 as shown in 9.

In chamber 7, a cylinder 11 is mounted to be linearly displaceable in the direction of device axis A. It rides endwise on a supporting armature 13. In cylinder 11, a threaded head 15 is mounted linearly nonrotatably in the direction of the device axis A flexibly movably with flexible element 17 as shown. The transfer armature departs linearly movably from chamber 17 in the direction of device axis A, through an opening 19.

A carriage 21 is also mounted on frame 1 and is movable in the direction of device axis A. Through an opening 23, transfer armature 13 enters a chamber of carriage 21, is mounted rotationally movably and flexibly movably linearly therein within the framework of suspension 25 in the direction of device axis A. Chamber 7 connected with plate 5 and the chamber of carriage 21 are coupled in terms of movement by a two-armed lever 27. One arm 27a of lever 27, as shown at 28a, is pivotably mounted on chamber 7 and pivotably mounted at central bearing 28b with second lever 27b. The second lever 27b in turn, as shown at 28c, is pivotably mounted on carriage 21. Middle joint 28b of two-armed lever 27 is guided in a guide curve 31 that is stationary relative to frame 1. This curve defines a path of motion for central joint 28b with a transverse component y, transversely to the direction of system axis A.

A shift transmission 33 rides on transfer armature 13. On the input side, shift transmission 33 has a linear movement takeoff, as shown preferably a takeoff wheel 35, preferably a gear, which preferably takes off the linear movement of transfer armature 13 relative to frame 1 along a specified portion, as shown by the meshing of gear 35 with a rack portion 37 on frame 1. On the output side, transmission 33 converts the relative linear movement detected on the input side, basically the linear relative movement of dome 33 and plate 5, depending on their direction, into the rotary movement  $\omega$  of armature 31 which is transmitted to screw head 15.

A compressed air line 39 terminates in chamber 7. A pressure curve evaluation unit 43 is connected to dome 3, possibly with an evacuation line 41. Preferably, a linear drive 45 is provided as the only active drive for the test device, such as a pneumatic piston cylinder arrangement, between frame 1 and support plate 5 or chamber 7, said test device, explained in the figure in terms of its structure, operating within the framework of the manufacturing method according to the invention as follows:

A previously assembled filter cartridge 50 is placed with its threaded opening 52 on housing base 54 coaxially over the threaded head 15 and/or the opening provided therefor in plate 5. It is held there by a holding device, for example by means of a suction device (not shown) or, and preferably, by magnets 46, which can be permanent magnets and/or electromagnets. This is accomplished with dome 3 and support plate 5 separated from one another to a relatively maximum degree.

Now drive 45 is activated. Support plate 5 with the filter cartridge 50 to be tested and the test chamber dome 3 are moved together linearly along frame 1. Coupled in terms of its movement by the two-armed lever 27, carriage 21 follows this movement. By engagement with rack 37, drive 33 is caused to function and the threaded head 15 is given a rotary movement by transfer armature 13. It screws automatically into the threaded connection 52 of filter cartridge 50, overcoming the force of spring 25. During this vertical movement of plate 5, lever 27, and carriage 21, the middle joint 28b moves away laterally in guide 31, whereupon the distance between the carriage and plate 5 is reduced, which also permits the screwing-in movement of threaded head 15. In another phase of the approach movement produced by drive 45 between plate 5 and dome 3, however, the middle joint 28b moves back from its transverse (y) deflection, whereupon the distance between plate 5 and carriage 21 again increases toward its maximum value. In view of the fact that in the meantime the threaded head 15 has been screwed into threaded connection 52, a tensile stress is produced in direction z through the threaded head 15 on the filter cartridge 50 to be tested. The cartridge is tensioned in a sealing fashion against supporting plate 5 with its sealing area (not shown) extending around the threaded connection 52. Under tension in this state, supporting plate 5 is placed tightly against dome 3 and by applying pressure to line 39, possibly with evacuation through line 41, a leak test pressure differential is produced across the wall of filter cartridge 50. The leak



test takes place in known fashion by following the pressure curve outside and inside filter cartridge 50.

When this test has been completed, the carrier plate 5 is moved backward by drive 45 and the threaded head 15 is unscrewed from the threaded connection as a result of the change in direction through transmission 33.

An important aspect of the method according to the invention and the test device according to the invention is that it is also determined whether the connecting thread of filter cartridge 50 has been formed as required or not. If this thread is made too small or is missing so that an attempt to screw in threaded head 15 when plate 5 is raised causes the head to strike essentially at the level of base 54, meaning that threaded head 15 and hence transfer armature 13 as well does not reach an upper SET position SET during the movement of plate 5 against dome 3 but is pushed inward against the force of spring 17.

On the other hand, if the threaded connection on cartridge 50 is shaped so that the threaded head, without gripping a thread, can be introduced into or retracted from an opening provided, this means that when the distance between supporting plate 5 and carriage 21 is increased further by movement guide 31, in the phase in which cartridge 50 is supposed to be tensioned against plate 5, head 15 is pulled out again against the force of spring 25, threaded from the improperly shaped opening and the SET position SET cannot be reached with transfer armature 27. From this it is clear that by simple detection of the position of transfer armature 13 relative to frame 1, it can be determined whether the connecting conditions for practical use have been created on the filter cartridge under test or not. From this it also follows that an improper screwing action under leak test conditions reads as a coarse leak. As shown in the figure, a position detector 57 is connected with frame 1 which monitors the position of transfer armature 13 as indicated schematically by pointer 59.

The following important advantages are achieved with the procedure according to the invention:

- Testing of filter cartridges under practical conditions including:
- Checking the connections,
- Checking the tightness of the connections,
- Achieving the simplest drive conditions (linear drive 45) for complex movements, namely closing the test chamber, screwing on the connection, checking the fit of the sealing parts against the outside of the cartridge, which in practice ensures the seal,
- The simplest check of the connection conditions (threaded connection) by position detection of one part relative to a fixed frame part.

For inline testing of filter cartridges, on a system according to the invention, a plurality of test devices explained in the figure is provided, grouped on a carousel for example, which are fed in rapid sequence with the filter cartridges to be tested.

The individual known in the art is familiar with many different ways of assembling filter cartridges of the above-mentioned type as well as leak testing filter cartridges using a tightly sealed test chamber 3, 5, all of which can be improved according to the invention.

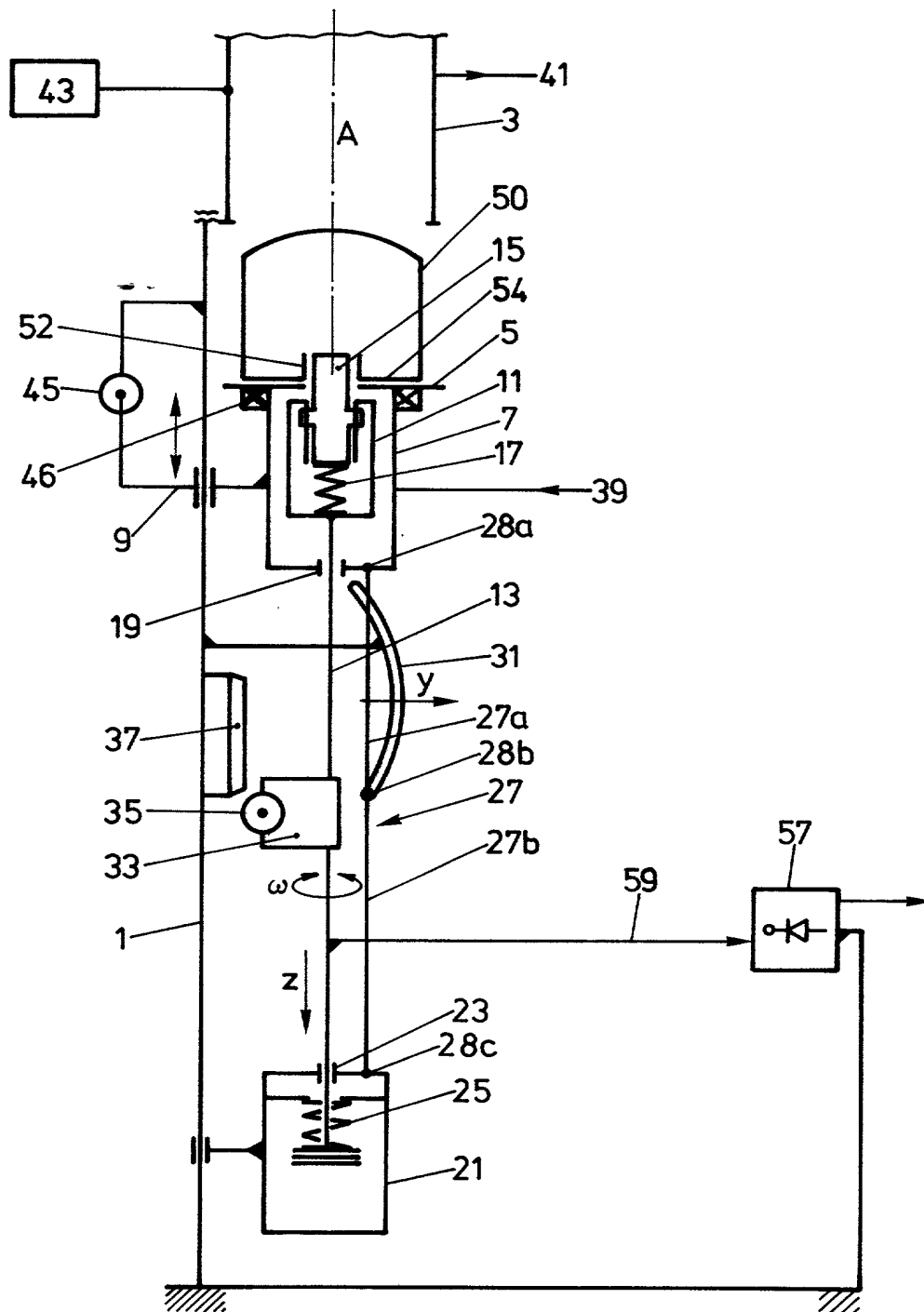
**Claims:**

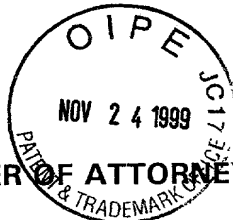
1. Method for producing filter cartridges (50), especially oil filter cartridges in which the filter is encapsulated in a filter housing whose base part has a threaded connection (52 ) for the medium to be filtered, characterized in that a threaded head (15) is then automatically screwed into threaded connection (52), filter cartridge (50) with threaded head (15) screwed into it is placed in a tightness test chamber (3, 5), and by creating a pressure differential across the filter housing wall and observing the pressure behavior in and/or outside the filter housing, a determination is made regarding the leakage or nonleakage of the filter housing and from observation of the screwing-in motion of threaded head (15), a determination is made as to whether the dimensional specifications for the filter housing have or have not been met.
2. Method according to Claim 1 with a sealing part provided externally and around threaded connection (52) on base part (54), characterized in that the filter housing is located with base part (54) on a plate (5), through which threaded head (15) is screwed into threaded connection (52) and then the sealing part is tensioned against plate (5) by means of threaded head (15).
3. Method according to one of Claims 1 or 2 characterized in that during the screwing-in motion and during the (possibly provided) tensioning between the sealing area and the plate, plate (5) is brought close to a test chamber dome which together with plate (5) forms the test chamber.
4. Method according to one of Claims 1 to 3 characterized in that the interior of the filter housing is pressurized through threaded head (15) and/or the adjacent area of plate (5).

5. Method according to one of Claims 1 to 4 characterized in that the screwing-in motion of threaded head (15), the (possibly provided) tensioning of the sealing area, and the relative movements of plate (5) and test chamber dome (3) that possibly take place simultaneously are produced by a linear drive (45).
6. Method according to one of Claims 1 to 5 characterized in that plate (5) is mounted on a carrier part (1) and threaded head (15) is mounted so that it is flexibly and linearly movable relative to plate (5) and the position of threaded head (15) relative to supporting part (1) is detected (57).
7. Test device for filter cartridges, especially oil filter cartridges, comprising the following:
  - At least one plate (5) for a filter cartridge (50) on a frame (1);
  - Test chamber dome (3) aligned with plate (5), with plate (5) and dome (3) being linearly movable relative to one another and together forming a test chamber that can be closed and sealed;characterized in that the following are also provided:
  - A threaded head (15) rotationally driven relative to plate (5) and also driven linearly, said head being movable through a plate opening essentially perpendicularly to the surface of the plate.
8. Device according to Claim 7 characterized in that threaded head (15) is mounted flexibly (17, 25) relative to plate (5) and relative to its linear mobility.

9. Device according to one of Claims 7 or 8 characterized in that plate (5) and/or dome (3) is linearly movably driven in one direction and a carriage is mounted coaxially with respect thereto and linearly movably on frame (1), with threaded head (15) mounted by a transfer armature 13 on the carriage so that it is rotationally movable and has its movement coupled relative to its linear motion, with the movement of the carriage being coupled to the relative movement of plate (5) and dome (3).
10. Device according to Claim 9 characterized in that the coupling of the movement between plate (5) or dome (3) and carriage (21) is designed so that with a specified relative linear movement of plate (5) and dome (3) carriage (21) first approaches plate (5) and then moves away from carriage (21).
11. Device according to one of Claims 9 or 10 characterized in that the movement coupling, preferably between plate (5) and carriage (21) is created by a two-armed jointed lever (27) whose middle joint (28b) is guided along a movement control curve (31) with a component (y) transversely to the linear direction of motion of the plate and dome (3).
12. Device according to one of Claims 7 to 11 characterized in that a rotary drive (33) is provided for threaded head (15) which converts a linear movement of the threaded head relative to dome (3) into a rotational movement of threaded head (15).
13. Device according to Claim 12 characterized in that threaded head (15) is effectively connected with a converting drive (33) which receives a linear relative motion between plate (5) and dome (3) on the input side and converts it into the rotary movement ( $\omega$ ) of threaded head (15) on the output side.

14. Device according to one of Claims 7 to 13 characterized in that the threaded head is a replaceable threaded head.
15. Device according to one of Claims 7 to 14 characterized in that a position detector (57) for the relative positions of the threaded head and dome (3) is provided.
16. Device according to one of Claims 7 to 15 characterized in that a motion coupling between plate (5) and threaded head (15) is created as follows:
  - When plate (5) and dome (3) approach one another, the threaded head strikes plate (5) as it rotates and is then pulled back against plate (5);
  - If plate (5) and dome (3) move apart, threaded head (15) is set rotating in the opposite direction and pulled back against plate (5).
17. Test system with a plurality of test devices according to one of Claims 7 to 16.





## DECLARATION AND POWER OF ATTORNEY - PATENT APPLICATION

As a below named inventor, I hereby declare that:

My citizenship, residence and post office address are as stated below; that I verily believe I am the original, first and sole inventor (if only one is named below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

### METHOD FOR MANUFACTURING FILTER CARTRIDGES AND TESTING APPARATUS

the specification of which \_\_\_\_\_ is attached hereto

X was filed on September 17, 1999, as Application  
Serial No. \_\_\_\_\_ and was amended on  
\_\_\_\_\_, and  
X which was filed as PCT International Application No.  
PCT/CH99/00391, filed August 24, 1999.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any provisional application(s) and any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the foreign application(s) on which priority is claimed:

Provisional and/or Foreign Application(s)			Priority Claimed	
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	_____ Yes	_____ No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application;

_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status-patented, pending or abandoned.)
-----------------------------------	------------------------	--



11  
I hereby appoint as principal attorneys: Donald R. Antonelli, Reg. No. 20,296; David T. Terry, Reg. No. 20,178; Melvin Kraus, Reg. No. 22,466; William I. Solomon, Reg. No. 28,565; Gregory E. Montone, Reg. No. 28,141; Ronald J. Shore, Reg. No. 28,577; Donald E. Stout, Reg. No. 26,422; Alan E. Schiavelli, Reg. No. 32,087; James N. Dresser, Reg. No. 22,973; Carl I. Brundidge, Reg. No. 29,621; and Paul J. Skwierawski, Reg. No. 32,173; to prosecute and transact all business in the Patent and Trademark Office connected with this application and any related United States and international applications.

Please Direct all Communications to:

Direct Telephone Calls To:

Antonelli, Terry, Stout & Kraus, LLP  
Suite 1800  
1300 North Seventeenth Street  
Arlington, Virginia 22209

**(703) 312-6600**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

(Full Name)

(Signature)

1-00  
Date November 2, 1999 Inventor Hans ZUERCHER  
Residence Dottikon, Switzerland CH Citizenship Switzerland  
Post Office Address Am Hägli 24, CH-5605 Dottikon, Switzerland

Applicant or Patentee: **Hans ZUERCHER**

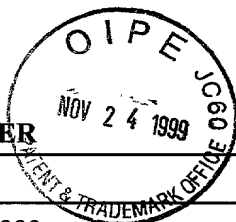
Serial or Patent No.: .

Filed or Issued: **September 17, 1999**

For:

**METHOD FOR MANUFACTURING FILTER CARTRIDGES AND TESTING APPARATUS**

Attorney's  
Docket No.: **635.37604X00**



**VERIFIED STATEMENT (DECLARATION) BY A NON-INVENTOR  
SUPPORTING A CLAIM BY ANOTHER FOR SMALL ENTITY STATUS**

I hereby declare that I am making this verified statement to support a claim by

**Hans ZUERCHER**

for small entity status for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, with regard to the invention entitled

**METHOD FOR MANUFACTURING FILTER CARTRIDGES AND TESTING APPARATUS**

by inventor(s) **Hans ZUERCHER**

described in: ☐ the specification filed herewith  
☒ application serial no. \_\_\_\_\_ filed **September 17, 1999**  
☐ patent no. \_\_\_\_\_ issued \_\_\_\_\_

I hereby declare that I would qualify as an independent inventor as defined in 37 C.F.R. § 1.9(c) for purposes of paying fees under section 41(a) and (b) of Title 35, United States Code, if I had made the above-identified invention.

I have not assigned, granted, conveyed, or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 C.F.R. § 1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 C.F.R. § 1.9(d) or a nonprofit organization under 37 C.F.R. § 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ no such person, concern, or organization  
☐ persons, concerns or organizations listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 C.F.R. § 1.27)

FULL NAME

ADDRESS

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

FULL NAME

ADDRESS

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. § 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Name of Person Signing

**Martin LEHMANN**

Title in Organization of Person Signing

Address of Person Signing

**Obere Farnbuhlstrasse 1, CH-5610 Wohlen, Switzerland**

Signature

Date

**18.10.1999**  
**October 18th, 1999**

Please type a plus sign (+) inside this box →



PTO/SB/122 (11-96)

Approved for use through 6/30/99. OMB 0651-0035

Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

+

**CHANGE OF  
CORRESPONDENCE ADDRESS  
Application**Address to:  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Application Number

09/381233

Filing Date

September 17, 1999

First Named Inventor

Hans ZUERCHER

Group Art Unit

Examiner Name

Attorney Docket Number

635.37604X00

Please change the Correspondence Address for the above-identified application to:



Customer Number

020457

Type Customer Number here



OR

☐ Firm or  
Individual Name

Address

Address

City

State

ZIP

Country

Telephone

Fax

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the :



Applicant.



Assignee of record of the entire interest.

Certificate under 37 CFR 3.73(b) is enclosed.



Attorney or agent of record .

Typed or  
Printed Name

Ronald J. Shore

Registration NO. 28,577

Signature

Date

September 17, 1999

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

662760 "EFFECTED"

+